UNCLASSIFIED

NAVSHIPS 0967-037-8020

REFERENCE STANDARDS BOOK

for

ANTENNA COUPLER GROUP AN/SRA-33

DEPARTMENT OF THE NAVY

NAVAL SHIP SYSTEMS COMMAND

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Approved: 26 July 1967

LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title page	Original		
ii to x	Original		
1 to 14	Original		

Errors found in this publication (other than obvious typographical errors), which have not been corrected by means of Temporary or Permanent Changes, should be reported on the User Activity Technical Manual Comment Sheet NAVSHIPS 4914 (10-62), FSN 0105-503-9850 located at the back of this book. Such report should include the complete title of the publication and the publication number (short title). Identify the page and line or figure and location of the error, and forward report to the Fleet Electronics Effectiveness Branch, Electronics Publications Section, Naval Ship Engineering Center, Washington D.C. 20360.

REFERENCE STANDARDS SUMMARY

Input Voltage _____ vac
Input Frequency _____ Hz
(When reference standards tests are made.)

Date _____
Serial No. _____
Installed in (Ship or Station) _____
Length of Transmission Line _____

Record on this summary sheet the test indications that have been entered in this book; retain this sheet in this book until required by the bureau or agency concerned.

Section A

Step No.		Ref. Std.
A1		_____ w
A2		_____ w
A3		_____ %
A4		_____ %
A5		_____ s
A6	a	_____ %
	b	_____ %
	c	_____ %
	d	_____ %
	e	_____ %
	f	_____ %
	g	_____ %
	h	_____ %
	i	_____ %
	j	_____ %
	k	_____ %
	l	_____ %
	m	_____ %
	n	_____ %
	o	_____ %
	p	_____ %
	q	_____ %
	r	_____ %
	s	_____ %

Section B

Step No.		Ref. Std.
B1		_____ w
B2		_____ w
B3		_____ %
B4		_____ %
B5		_____ s
B6	a	_____ %
	b	_____ %
	c	_____ %
	d	_____ %
	e	_____ %
	f	_____ %
	g	_____ %
	h	_____ %
	i	_____ %
	j	_____ %
	k	_____ %
	l	_____ %
	m	_____ %
	n	_____ %
	o	_____ %
	p	_____ %
	q	_____ %
	r	_____ %
	s	_____ %

Section C

Step No.		Ref. Std.
C1		_____ w
C2		_____ w
C3		_____ %
C4		_____ %
C5		_____ s
C6	a	_____ %
	b	_____ %
	c	_____ %
	d	_____ %
	e	_____ %
	f	_____ %
	g	_____ %
	h	_____ %
	i	_____ %
	j	_____ %
	k	_____ %
	l	_____ %
	m	_____ %
	n	_____ %
	o	_____ %

REFERENCE STANDARDS SUMMARY-Continued

Step No.		Ref. Std.
C6	p	_____%
	q	_____%
	r	_____%
	s	_____%

Section D

D1		_____w
D2		_____w
D3		_____%
D4		_____%
D5		_____s
D6	a	_____%
	b	_____%
	c	_____%
	d	_____%

Step No.		Ref. Std.
D6	e	_____%
	f	_____%
	g	_____%
	h	_____%
	i	_____%
	j	_____%
	k	_____%
	l	_____%
	m	_____%
	n	_____%
	o	_____%
	p	_____%
	q	_____%
	r	_____%
	s	_____%

Field Changes Accomplished on This Equipment _____

_____

Reference Standards Performed by _____

Date _____ Approved by _____

Title-Position _____ Activity _____

FIELD CHANGES AND REVISIONS

REASON FOR REVISION (FIELD CHANGE, EIB, etc.)	STEPS AFFECTED	EFFECT OF REVISION	DATE

GENERAL

Assignment. This maintenance standards book is to be assigned permanently to a specific installation of Antenna Coupler Group AN/SRA-33.

Purpose. The purpose of this book is to describe a carefully selected series of reference standards tests and preventive maintenance procedures which serve to: (a) indicate optimum equipment performance, (b) reveal areas of deteriorated performance, and (c) extend operational equipment life.

Utilization. The contents of this book are to be utilized as follows:

For checkout validation. Satisfactory completion of the tests and procedures in this book and entry of the results on the reference standards summary sheets shall serve as validation of equipment checkout.

For periodic maintenance tests. These tests verify the operational readiness of the equipment and establish the scheduling of preventive maintenance procedures. (See page v #).

For corrective maintenance. The results of the reference standards tests and the test procedures in the text portion of the book will serve as valuable sources of information for troubleshooting, repair, or other corrective maintenance.

Safety. Because of the extensive electrical shock hazards which confront the electronic technician in the performance of his duties, he must discipline himself to employ proper safety work practices and precautions at all times. NAVSHIPS 250-660-42, Electric Shock--Its Causes and Its Prevention, which contains a discussion of the fundamental principles of electrical safety, shall be made available to all personnel engaged in this work.

CONTENTS AND INSTRUCTIONS

Title Page. The serial number and, if applicable, the model number of the particular equipment to which this book is assigned must be entered on this page.

Reference Standards Summary Sheets. One copy of the Reference Standards Summary sheet(s) is provided on which is to be transcribed the results of the reference standards tests. Retain this copy in this book until required by the bureau or agency concerned.

Revisions. A field change and revisions sheet is included where all revisions to this book and field changes affecting the steps in the book shall be entered.

Special Procedures and Adjustments. Included is a list of special procedures and adjustments required to perform certain steps.

Block Diagram. A block diagram has been drawn showing the functional relationship of the equipment, and indicating the basic subdivisional designations of the book sections.

List of Reference Standards Tests. Also included is a list of reference standards tests for quick reference as to the number and content of the reference standards tests. The procedures for performing the tests are located throughout the book and are referred to in the list. All procedures designated by step numbers enclosed in stars are referred to on the performance standards sheet.

CONTENTS AND INSTRUCTIONS-Continued

Test Equipment Required. A list of test parameters and the equipment required to satisfy these parameters is furnished. Alternate test equipment and the period in which the test equipment is required are also listed. In addition, a chart is furnished which shows the estimated times for completion of the periodic tests. Refer to NAVSHIPS 95719 T/E Index (0967-008-9000).

Reference Standards Tests. These tests are subdivided into functional groups to facilitate accomplishment of equipment checkout-validation. The reference standards tests indications are to be established and recorded upon completion of installation, and these recorded values should be altered only when a yard overhaul or major field change necessitates such revision. Before establishing the test indications, the equipment shall be completely and satisfactorily checked out on ships own power by personnel well-qualified on this equipment to ensure optimum equipment operation. The test indications are then to be entered in ink in the reference standards column of the book. Ships own test equipment shall be used to establish initial Reference Standards.

NOTE: The reference standard tolerances indicate the maximum and minimum limits of a test within which satisfactory operation can be expected for units of the same model. The tolerances are not to be construed as absolute limits, since they are not necessarily developed from a complete evaluation. However, if any tolerance appears unreasonable when compared with the result of the test, the accomplishment of the test shall be certified as accurate by an electronics engineer, and the Naval Ships Engineering Center shall be so notified by a note on the User Activity Technical Manual Comment Sheet, located at the back of the book.

Illustrations. The written procedures explain in detail the method of making each test and the necessary test equipment setup for performance of the test. Illustrations are used only when the procedure is of such a complex nature that it precludes a clear verbal description.

Operating Conditions and Control Settings. Each page includes a list of operating conditions and control settings that apply to the entire page unless noted otherwise within the respective step. After performing the procedures, reset all operating controls, switches, etc., to their normal positions.

Instructions. The recommended periodic maintenance schedule includes those checks that are indicative of equipment performance levels and the required lubrication and cleaning procedures. The schedule briefly describes the steps to be performed, the detailed procedures of which can be found by referring to the section and step numbers listed in the SECTION AND STEP column. Additional "unscheduled" maintenance tests have been included in this book. These tests are to be performed only at the time of installation or overhaul, or when the results from a related scheduled procedure indicates trouble.

Following the successful accomplishment of the periodic maintenance tests, the equipment should be in proper operating condition. Differences from normal indications shall receive corrective action.

#The Naval Ships Engineering Center requirement for this schedule is canceled when the Electronics Planned Maintenance System is implemented for this equipment.

TEST EQUIPMENT REQUIRED

CATEGORY	RECOMMENDED	ALTERNATE	PARAMETERS	SECTION				PERIOD			
				A	B	C	D	Q	SA	A	U
Radio set	AN/SRC-21	AN/SRC-20	225.0 to 400.0 MHz	X	X	X	X		X		
In-line wattmeter	AN/URM-120 (2 required)	AN/URM-96A	50/150 watts, 200 to 400 MHz	X	X	X	X		X		
Dummy load	DA-91A/U	DA-412/U	150 watts, 50 ohms	X	X	X	X		X		
Stopwatch	Stopwatch			X	X	X	X		X		

ESTIMATED TIME REQUIRED TO PERFORM PERIODIC MAINTENANCE TESTS

PERIODIC CHECKS	TIME REQUIRED*
Semianually	120 min

*Estimated time is based only on making the test connections and performing the written procedures.

FEDERAL STOCK NUMBERS OF LUBRICANTS

QUANTITY	FSN	MIL DESIGNATION
1 oz		MIL-G-7118

SPECIAL PROCEDURES AND ADJUSTMENTS

1. No special procedures are required prior to performance standards tests.

2. Unless otherwise specified, all tests are performed with the AN/SRA-33 connected as shown in figure 2.

FUNCTIONAL BLOCK DIAGRAM

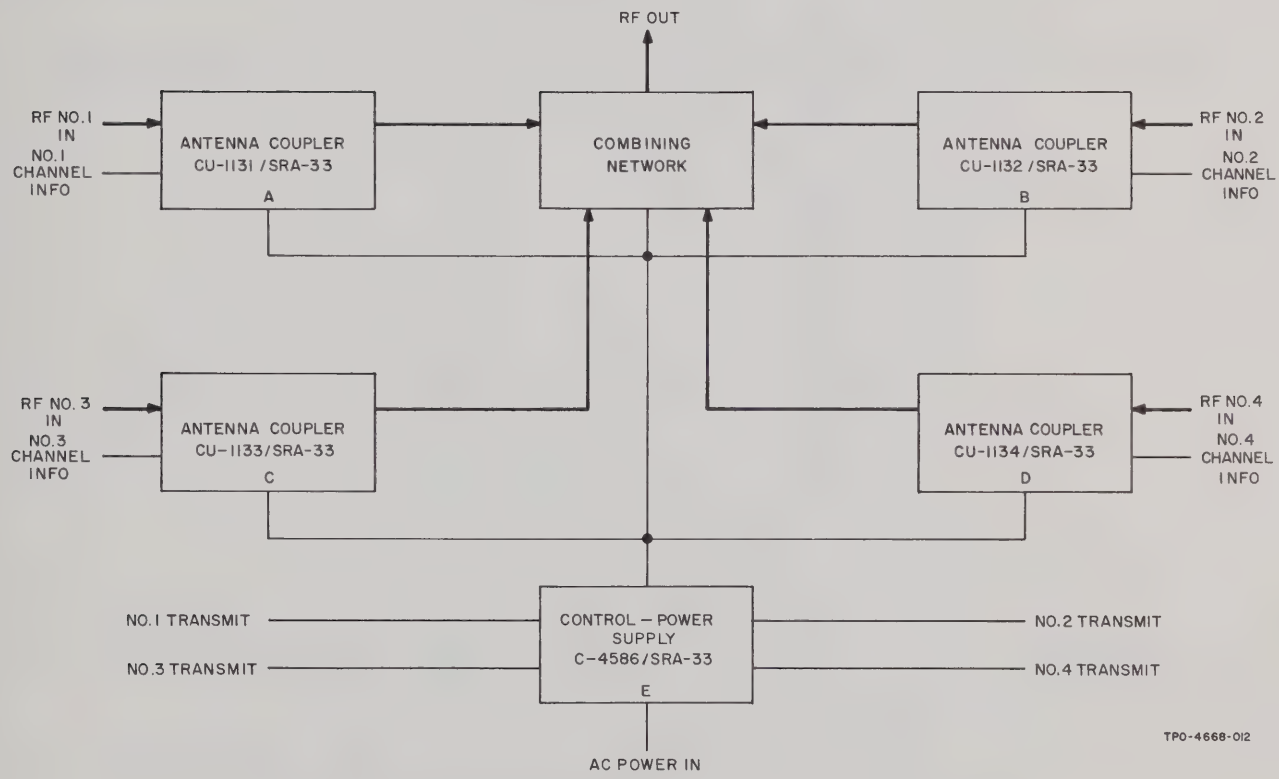

Figure 1. Antenna Coupler AN/SRA-33, Functional Block Diagram

LIST OF REFERENCE STANDARDS TESTS

SECTION	STEP	ACTION REQUIRED
A Coupler No. 1 (CU-1131/SRA-33)	A1	Record POWER METER NO. 1 FORWARD POWER calibration error.
	A2	Record POWER METER NO. 1 REFLECTED POWER calibration error.
	A3	Record percent insertion loss.
	A4	Record percent reset accuracy.
	A5	Record tuning time.
	A6	Record percent of reflected/forward power.
	A7	Inspection and lubrication of cavity tuning gear assembly.
B Coupler No. 2 (CU-1132/SRA-33)	B1	Record POWER METER NO. 2 FORWARD POWER calibration error.
	B2	Record POWER METER NO. 2 REFLECTED POWER calibration error.
	B3	Record percent insertion loss.
	B4	Record percent reset accuracy.
	B5	Record tuning time.

LIST OF REFERENCE STANDARDS TESTS-Continued

SECTION	STEP	ACTION REQUIRED
B (Cont)	B6	Record percent of reflected/forward power.
	B7	Inspection and lubrication of cavity tuning gear assembly.
C Coupler No. 3 (CU-1133/SRA-33)	C1	Record POWER METER NO. 3 FORWARD POWER calibration error.
	C2	Record POWER METER NO. 3 REFLECTED POWER calibration error.
	C3	Record percent insertion loss.
	C4	Record percent reset accuracy.
	C5	Record tuning time.
	C6	Record percent of reflected/forward power.
	C7	Inspection and lubrication of cavity tuning gear assembly.
D Coupler No. 4 (CU-1134/SRA-33)	D1	Record POWER METER NO. 4 FORWARD POWER calibration error.
	D2	Record POWER METER NO. 4 REFLECTED POWER calibration error.
	D3	Record percent insertion loss.

LIST OF REFERENCE STANDARDS TESTS-Continued

SECTION	STEP	ACTION REQUIRED
D (Cont)	D4	Record percent reset accuracy.
	D5	Record tuning time.
	D6	Record percent of reflected/forward power.
	D7	Inspection and lubrication of cavity tuning gear assembly.

EQUIPMENT CONNECTIONS, PERFORMANCE STANDARDS TESTS

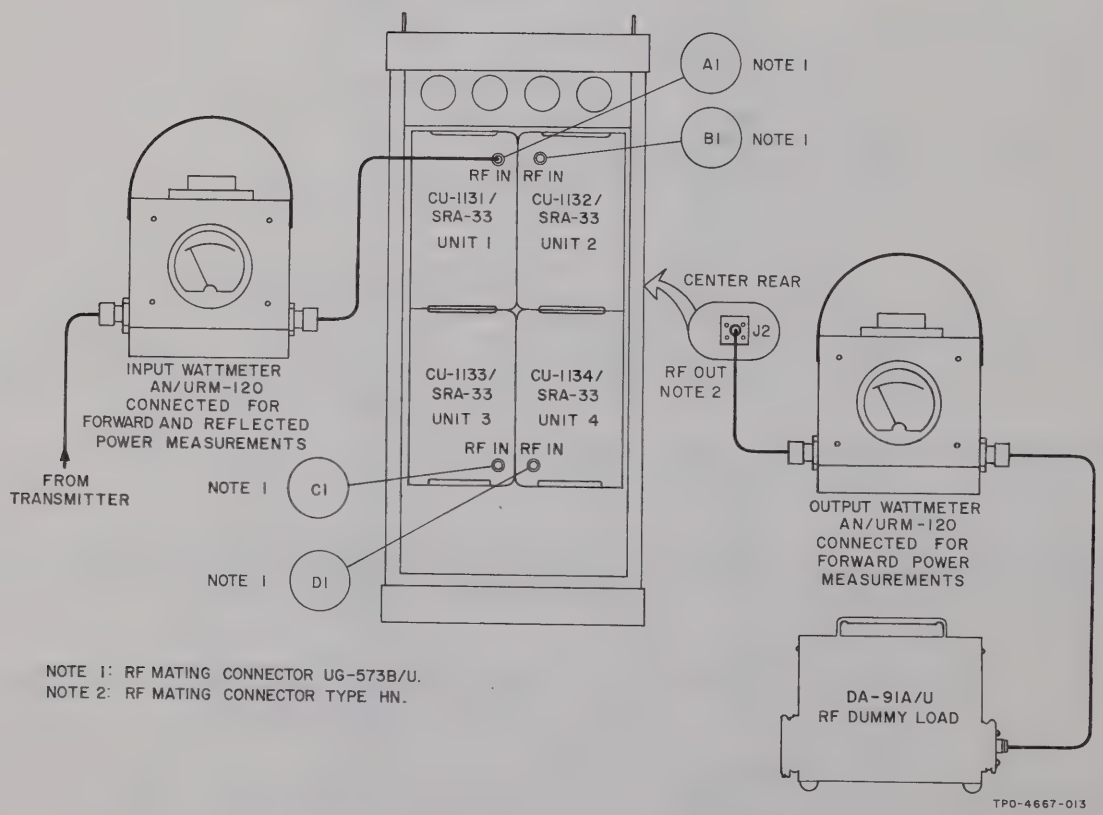

Figure 2. Performance Standards Tests, Equipment Connections

COUPLER NO. 1, CU-1131/SRA-33

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER METER NO. 1 FORWARD POWER-REFLECTED POWER switch: FORWARD POWER
CU-1131/SRA-33 MANUAL-LOCAL PRESET-REMOTE PRESET switch: MANUAL
CU-1131/SRA-33 10 MC MANUAL FREQUENCY SELECT dial: 22
CU-1131/SRA-33 1 MC MANUAL FREQUENCY SELECT dial: 5
CU-1131/SRA-33 .05 MC MANUAL FREQUENCY SELECT dial: 00
C-4586/SRA-33 ON-OFF switch: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
(A1)	Record POWER METER NO. 1 FORWARD POWER calibration error.	POWER METER NO. 1 and input AN/URM-120.	_____ w (0)
	PROCEDURE: Place input AN/URM-120 to FORWARD. Connect test equipment to CU-1131/SRA-33 as shown in figure 2. Manually operate AN/SRC-21 to 225.00 MHz. After tuning cycle is complete, key AN/SRC-21 and record the difference between POWER METER NO. 1 FORWARD POWER reading and AN/URM-120 reading.		
(A2)	Record POWER METER NO. 1 REFLECTED POWER calibration error.	POWER METER NO. 1 and input AN/URM-120.	_____ w (0)
	PROCEDURE: Same as step A1; place POWER METER NO. 1 FORWARD POWER-REFLECTED POWER switch to REFLECTED POWER; place input AN/URM-120 to REFLECTED. Record the difference between POWER METER NO. 1 REFLECTED POWER reading and AN/URM-120 reading.		
A3	Record CU-1131/SRA-33 insertion loss.	Input and output AN/URM-120 wattmeters.	_____ % (less than 37%)
	PROCEDURE: Place the input and output AN/URM-120 to FORWARD. Same as step A1; record the percentage difference between the forward power readings of the input and output AN/URM-120 wattmeters.		
A4	Record CU-1131/SRA-33 reset accuracy.	Output AN/URM-120 wattmeter.	_____ % (less than 7.2%)
	PROCEDURE: Place output AN/URM-120 to FORWARD. Same as step A3; note the forward power reading from step A3. Unkey AN/SRC-21 and adjust 10 MC MANUAL (Cont)		

COUPLER NO. 1, CU-1131/SRA-33

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
A4 (Cont)	(Cont) FREQUENCY SELECT dial to 23; then reset it to 22. Observe that FREQ MC dial on front of CU-1131/SRA-33 returns to 225.00 MHz with no more than one overshoot before it becomes stationary. Key AN/SRC-21 and record the percentage difference in forward power output readings obtained in this step and in step A3.		
A5	Record CU-1131/SRA-33 tuning time.	Stopwatch and FREQ MC dial.	_____ s (less than 15 s)
	PROCEDURE: With CU-1131/SRA-33 tuned to 225.00 MHz (step A4), set MANUAL FREQUENCY SELECT dials to 39, 9, and 90 and record the time required for the FREQ MC to indicate 399.90 MHz.		
A6	Record CU-1131/SRA-33 reflected/forward power ratio.	Input AN/URM-120 wattmeter.	
	PROCEDURE: Same as step A1; record percentage of reflected/forward power readings of input wattmeter at the following frequencies: a. 399.90 MHz. b. 388.80 MHz. c. 377.70 MHz. d. 366.60 MHz. e. 355.50 MHz. f. 344.40 MHz. g. 333.30 MHz. h. 322.20 MHz. i. 311.10 MHz. j. 300.00 MHz. k. 299.90 MHz. l. 288.80 MHz. m. 277.70 MHz. n. 266.60 MHz. o. 255.50 MHz. p. 244.40 MHz. q. 233.30 MHz. r. 229.10 MHz. s. 225.00 MHz. Reset the 10 MC MANUAL FREQUENCY SELECT dial to 23.		_____ % (less than 11%)

INSPECT AND LUBRICATE CAVITY TUNING AND AUTOPOSITIONER GEAR ASSEMBLIES

OPERATING CONDITIONS AND CONTROL SETTINGS:

C-4586/SRA-33 ON-OFF switch: OFF

STEP NO.	ACTION REQUIRED
(A7)	Inspect and lubricate cavity tuning gear assembly.
	PROCEDURE: Remove the antenna coupler from the equipment cabinet by loosening 8 screws (4 on each side of the front panel) and carefully slide the unit out of the cabinet. To remove the antenna coupler cover, remove the 3 screws that secure the output connector gasket and the 10 screws that fasten the cover to the front panel; remove the output connector gasket and then the cover. CAUTION Discharge capacitors C1, C2, C3, and C4 before proceeding. To separate the front panel assembly from the gearplate assembly, first place the antenna coupler face down so that it rests on the handles attached to the front panel. Then remove the 6 screws that secure the gearplate to the front panel. Disconnect J5 from P6, and while carefully lifting the upper assembly, disconnect coaxial connector P6 from J6 and then remove the upper assembly. If gears appear to be clean, sufficiently lubricated, and free running, DO NOT LUBRICATE until next inspection period. If old lubricant has become hard or dirty, clean the gears with trichloroethylene and dry with low-pressure compressed air. Using a camel-hair brush, apply grease (MIL-G-7118) sparingly to all gear teeth. Wipe any grease from the gear and surrounding components with a soft cloth.

COUPLER NO. 2, CU-1132/SRA-33

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER METER NO. 2 FORWARD POWER-REFLECTED POWER switch: FORWARD POWER
CU-1132/SRA-33 MANUAL-LOCAL PRESET-REMOTE PRESET switch: MANUAL
CU-1132/SRA-33 10 MC MANUAL FREQUENCY SELECT dial: 22
CU-1132/SRA-33 1 MC MANUAL FREQUENCY SELECT dial: 5
CU-1132/SRA-33 .05 MC MANUAL FREQUENCY SELECT dial: 00
C-4586/SRA-33 ON-OFF switch: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
(B1)	Record POWER METER NO. 2 FORWARD POWER calibration error.	POWER METER NO. 2 and input AN/URM-120.	_____ w (0)
	PROCEDURE: Place input AN/URM-120 to FORWARD. Connect test equipment to CU-1132/SRA-33 as shown in figure 2. Manually operate AN/SRC-21 to 225.00 MHz. After tuning cycle is complete, key AN/SRC-21 and record the difference between POWER METER NO. 2 FORWARD POWER reading and AN/URM-120 reading.		
(B2)	Record POWER METER NO. 2 REFLECTED POWER calibration error.	POWER METER NO. 2 and input AN/URM-120.	_____ w (0)
	PROCEDURE: Same as step B1; place POWER METER NO. 2 FORWARD POWER-REFLECTED POWER switch to REFLECTED POWER: place input AN/URM-120 to REFLECTED. Record the difference between POWER METER NO. 2 REFLECTED POWER reading and AN/URM-120 reading.		
B3	Record CU-1132/SRA-33 insertion loss.	Input and output AN/URM-120 wattmeters.	_____ % (less than 37%)
	PROCEDURE: Place input and output AN/URM-120 to FORWARD. Same as step B1; record the percentage difference between the forward power readings of the input and output AN/URM-120 wattmeters.		
B4	Record CU-1132/SRA-33 reset accuracy.	Output AN/URM-120 wattmeter.	_____ % (less than 7.2%)
	PROCEDURE: Place output AN/URM-120 to FORWARD. Same as step B3; note the forward power reading from step B3. Unkey AN/SRC-21 and adjust 10 MC MANUAL (Cont)		

COUPLER NO. 2, CU-1132/SRA-33

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
B4 (Cont)	(Cont) FREQUENCY SELECT dial to 23; then reset it to 22. Observe that FREQ MC dial on front of CU-1132/SRA-33 returns to 225.00 MHz with no more than one overshoot before it becomes stationary. Key AN/SRC-21 and record the percentage difference in forward power output readings obtained in this step and in step B3.		
B5	Record CU-1132/SRA-33 tuning time.	Stopwatch and FREQ MC dial.	_____ s (less than 15 s)
	PROCEDURE: With CU-1132/SRA-33 tuned to 225.00 MHz (step B4), set MANUAL FREQUENCY SELECT dials to 39, 9, and 90 and record the time required for the FREQ MC dial to indicate 399.90 MHz.		
B6	Record CU-1132/SRA-33 reflected/forward power ratio.	Input AN/URM-120 wattmeter.	
	PROCEDURE: Same as step B1; record percentage of reflected/forward power readings of input wattmeter at the following frequencies: a. 399.90 MHz. b. 388.80 MHz. c. 377.70 MHz. d. 366.60 MHz. e. 355.50 MHz. f. 344.40 MHz. g. 333.30 MHz. h. 322.20 MHz. i. 311.10 MHz. j. 300.00 MHz. k. 299.90 MHz. l. 288.80 MHz. m. 277.70 MHz. n. 266.60 MHz. o. 255.50 MHz. p. 244.40 MHz. q. 233.30 MHz. r. 229.10 MHz. s. 225.00 MHz. Reset the 10 MC MANUAL FREQUENCY SELECT dial to 23.		_____ % (less than 11%)

INSPECT AND LUBRICATE CAVITY TUNING AND AUTOPOSITIONER GEAR ASSEMBLY

OPERATING CONDITIONS AND CONTROL SETTINGS:

C-4586/SRA-33 ON-OFF switch: OFF

STEP NO.	ACTION REQUIRED
(B7)	Inspect and lubricate cavity tuning gear assembly.
	PROCEDURE: Remove the antenna coupler from the equipment cabinet by loosening 8 screws (4 on each side of the front panel) and carefully slide the unit out of the cabinet. To remove the antenna coupler cover, remove the 3 screws that secure the output connector gasket and the 10 screws that fasten the cover to the front panel; remove the output connector gasket and then the cover. CAUTION Discharge capacitors C1, C2, C3, and C4 before proceeding. To separate the front panel assembly from the gearplate assembly, first place the antenna coupler face down so that it rests on the handles attached to the front panel. Then remove the 6 screws that secure the gearplate to the front panel. Disconnect J5 from P6, and while carefully lifting the upper assembly, disconnect coaxial connector P6 from J6 and then remove the upper assembly. If gears appear to be clean, sufficiently lubricated, and free running, DO NOT LUBRICATE until next inspection period. If old lubricant has become hard or dirty, clean the gears with trichloroethylene and dry with low-pressure compressed air. Using a camel-hair brush, apply grease (MIL-G-7118) sparingly to all gear teeth. Wipe any excess grease from the gear and surrounding components with a soft cloth.

COUPLER NO. 3, CU-1133/SRA-33

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER METER NO. 3 FORWARD POWER-REFLECTED POWER switch: FORWARD POWER
CU-1133/SRA-33 MANUAL-LOCAL PRESET-REMOTE PRESET switch: MANUAL
CU-1133/SRA-33 10 MC MANUAL FREQUENCY SELECT dial: 22
CU-1133/SRA-33 1 MC MANUAL FREQUENCY SELECT dial: 5
CU-1133/SRA-33 .05 MC MANUAL FREQUENCY SELECT dial: 00
C-4586/SRA-33 ON-OFF switch: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
C1	Record POWER METER NO. 3 FORWARD POWER calibration error.	POWER METER NO. 3 and input AN/URM-120.	_____ w (0)
	PROCEDURE: Place input AN/URM-120 to FORWARD. Connect test equipment to CU-1133/SRA-33 as shown in figure 2. Manually operate AN/SRC-21 to 225.00 MHz. After tuning cycle is complete, key AN/SRC-21 and record the difference between POWER METER NO. 3 FORWARD POWER reading and AN/URM-120 reading.		
C2	Record POWER METER NO. 3 REFLECTED POWER calibration error.	POWER METER NO. 3 and input AN/URM-120.	_____ w (0)
	PROCEDURE: Same as step C1; place POWER METER NO. 3 FORWARD POWER-REFLECTED POWER switch to REFLECTED POWER; place input AN/URM-120 to REFLECTED. Record the difference between POWER METER NO. 3 REFLECTED POWER reading and AN/URM-120 reading.		
C3	Record CU-1133/SRA-33 insertion loss.	Input and output AN/URM-120 wattmeters.	_____ % (less than 37%)
	PROCEDURE: Place input and output AN/URM-120 to FORWARD. Same as step C1; record the percentage difference between the forward power readings of the input and output AN/URM-120 wattmeters.		
C4	Record CU-1133/SRA-33 reset accuracy.	Output AN/URM-120 wattmeter.	_____ % (less than 7.2%)
	PROCEDURE: Place output AN/URM-120 to FORWARD. Same as step C3; note the forward power reading from step C3. Unkey AN/SRC-21 and adjust 10 MC MANUAL (Cont)		

COUPLER NO. 3, CU-1133/SRA-33

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
C4 (Cont)	(Cont) FREQUENCY SELECT dial to 23; then reset it to 22. Observe that FREQ MC dial on front of CU-1133/SRA-33 returns to 225.00 MHz with no more than one overshoot before it becomes stationary. Key AN/SRC-21 and record the percentage difference in forward power output readings obtained in this step and in step C3.		
C5	Record CU-1133/SRA-33 tuning time.	Stopwatch and FREQ MC dial.	_____ s (less than 15 s)
	PROCEDURE: With CU-1133/SRA-33 tuned to 225.00 MHz (step C4), set MANUAL FREQUENCY SELECT dials to 39, 9, and 90 and record the time required for the FREQ MC to indicate 399.90 MHz.		
C6	Record CU-1133/SRA-33 reflected/forward power ratio.	Input AN/URM-120 wattmeter.	
	PROCEDURE: Same as step C1; record percentage of reflected/forward power readings of input wattmeter at the following frequencies: a. 399.90 MHz. b. 388.80 MHz. c. 377.70 MHz. d. 366.60 MHz. e. 355.50 MHz. f. 344.40 MHz. g. 333.30 MHz. h. 322.20 MHz. i. 311.10 MHz. j. 300.00 MHz. k. 299.90 MHz. l. 288.80 MHz. m. 277.70 MHz. n. 266.60 MHz. o. 255.50 MHz. p. 244.40 MHz. q. 233.30 MHz. r. 229.10 MHz. s. 225.00 MHz. Reset the 10 MC MANUAL FREQUENCY SELECT dial to 23.		_____ % (less than 11%)

INSPECT AND LUBRICATE CAVITY TUNING AND AUTOPOSITIONER GEAR ASSEMBLIES

OPERATING CONDITIONS AND CONTROL SETTINGS:

C-4586/SRA-33 ON-OFF switch: OFF

STEP NO.	ACTION REQUIRED
(C7)	Inspect and lubricate cavity tuning gear assembly.
	PROCEDURE: Remove the antenna coupler from the equipment cabinet by loosening 8 screws (4 on each side of the front panel) and carefully slide the unit out of the cabinet. To remove the antenna coupler cover, remove the 3 screws that secure the output connector gasket and the 10 screws that fasten the cover to the front panel; remove the output connector gasket and then the cover. CAUTION Discharge capacitors C1, C2, C3, and C4 before proceeding. To separate the front panel assembly from the gearplate assembly, first place the antenna coupler face down so that it rests on the handles attached to the front panel. Then remove the 6 screws that secure the gearplate to the front panel. Disconnect J5 from P6, and while carefully lifting the upper assembly, disconnect coaxial connector P6 from J6 and then remove the upper assembly. If gears appear to be clean, sufficiently lubricated, and free running, DO NOT LUBRICATE until next inspection period. If old lubricant has become hard or dirty, clean the gears with trichloroethylene and dry with low-pressure compressed air. Using a camel-hair brush, apply grease (MIL-G-7118) sparingly to all gear teeth. Wipe any excess grease from the gear and surrounding components with a soft cloth.

COUPLER NO. 4, CU-1134/SRA-33

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER METER NO. 4 FORWARD POWER-REFLECTED POWER switch: FORWARD POWER
CU-1134/SRA-33 MANUAL-LOCAL PRESET-REMOTE PRESET switch: MANUAL
CU-1134/SRA-33 10 MC MANUAL FREQUENCY SELECT dial: 22
CU-1134/SRA-33 1 MC MANUAL FREQUENCY SELECT dial: 5
CU-1134/SRA-33 .05 MC MANUAL FREQUENCY SELECT dial: 00
C-4586/SRA-33 ON-OFF switch: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
(D1)	Record POWER METER NO. 4 FORWARD POWER calibration error.	POWER METER NO. 4 and input AN/URM-120.	_____w (0)
	PROCEDURE: Place input AN/URM-120 to FORWARD. Connect test equipment to CU-1134/SRA-33 as shown in figure 2. Manually operate AN/SRC-21 to 225.00 MHz. After tuning cycle is complete, key AN/SRC-21 and record the difference between POWER METER NO. 4 FORWARD POWER reading and AN/URM-120 reading.		
(D2)	Record POWER METER NO. 4 REFLECTED POWER calibration error.	POWER METER NO. 4 and input AN/URM-120.	_____w (0)
	PROCEDURE: Same as step D1; place POWER METER NO. 4 FORWARD POWER-REFLECTED POWER switch to REFLECTED POWER; place input AN/URM-120 to REFLECTED. Record the difference between POWER METER NO. 4 REFLECTED POWER reading and AN/URM-120 reading.		
(D3)	Record CU-1134/SRA-33 insertion loss.	Input and output AN/URM-120 wattmeters.	_____% (less than 37%)
	PROCEDURE: Place input and output AN/URM-120 to FORWARD. Same as step D1; record the percentage difference between the forward power readings of the input and output AN/URM-120 wattmeters.		
(D4)	Record CU-1134/SRA-33 reset accuracy.	Output AN/URM-120 wattmeter.	_____% (less than 7.2%)
	PROCEDURE: Place output AN/URM-120 to FORWARD. Same as step D3; note the forward power reading from step D3. Unkey AN/SRC-21 and adjust 10 MC MANUAL FREQUENCY SELECT dial to 23; then reset it to 22. Observe that FREQ MC dial on front of CU-1134/SRA-33 returns to 225.00 MHz with no more than one overshoot before it becomes (Cont)		

COUPLER NO. 4, CU-1134/SRA-33

STEP NO.	ACTION REQUIRED	READ INDICATION ON	PERFORMANCE STANDARD
D4 (Cont)	(Cont) stationary. Key AN/SRC-21 and record the percentage difference in forward power output readings obtained in this step and in step D3.		
D5	Record CU-1134/SRA-33 tuning time.	Stopwatch and FREQ MC dial.	_____ s (less than 15 s)
	PROCEDURE: With CU-1134/SRA-33 tuned to 225.00 MHz (step D4), set MANUAL FREQUENCY SELECT dials to 39, 9, and 90 and record the time required for the FREQ MC to indicate 399.90 MHz.		
D6	Record CU-1134/SRA-33 reflected/forward power ratio.	Input AN/URM-120 wattmeter.	
	PROCEDURE: Same as step D1; record percentage of reflected/forward power readings of input wattmeter at the following frequencies: a. 399.90 MHz. b. 388.80 MHz. c. 377.70 MHz. d. 366.60 MHz. e. 355.50 MHz. f. 344.40 MHz. g. 333.30 MHz. h. 322.20 MHz. i. 311.10 MHz. j. 300.00 MHz. k. 299.90 MHz. l. 288.80 MHz. m. 277.70 MHz. n. 266.60 MHz. o. 255.50 MHz. p. 244.40 MHz. q. 233.30 MHz. r. 229.10 MHz. s. 225.00 MHz. Reset the 10 MC MANUAL FREQUENCY SELECT dial to 23.		_____ % (less than 11%)

INSPECT AND LUBRICATE CAVITY TUNING AND AUTOPOSITIONER GEAR ASSEMBLIES

OPERATING CONDITIONS AND CONTROL SETTINGS:

C-4586/SRA-33 ON-OFF switch: OFF

STEP NO.	ACTION REQUIRED
D7	Inspect and lubricate cavity tuning gear assembly.

PROCEDURE: Remove the antenna coupler from the equipment cabinet by loosening 8 screws (4 on each side of the front panel) and carefully slide the unit out of the cabinet. To remove the antenna coupler cover, remove the 3 screws that secure the output connector gasket and the 10 screws that fasten the cover to the front panel; remove the output connector gasket and then the cover.

CAUTION

Discharge capacitors C1, C2, C3, and C4 before proceeding.

To separate the front panel assembly from the gearplate assembly, first place the antenna coupler face down so that it rests on the handles attached to the front panel. Then remove the 6 screws that secure the gearplate to the front panel. Disconnect J5 from P6, and while carefully lifting the upper assembly, disconnect coaxial connector P6 from J6 and then remove the upper assembly.

If gears appear to be clean, sufficiently lubricated, and free running, DO NOT LUBRICATE until next inspection period.

If old lubricant has become hard or dirty, clean the gears with trichloroethylene and dry with low-pressure compressed air.

Using a camel-hair brush, apply grease (MIL-G-7118) sparingly to all gear teeth. Wipe any excess grease from the gear and surrounding components with a soft cloth.

RECOMMENDED PERIODIC MAINTENANCE SCHEDULE

SEMIANNUALLY TIME REQUIRED 120 MIN

STEP NO.	ACTION REQUIRED	SECTION AND STEP NO.
1	Record POWER METER NO. 1 FORWARD POWER calibration error.	A1
2	Record POWER METER NO. 1 REFLECTED POWER calibration error.	A2
3	Record CU-1131/SRA-33 insertion loss.	A3
4	Record CU-1131/SRA-33 reset accuracy.	A4
5	Record CU-1131/SRA-33 tuning time.	A5
6	Record CU-1131/SRA-33 reflected/forward power ratio.	A6
7	Record POWER METER NO. 2 FORWARD POWER calibration error.	B1
8	Record POWER METER NO. 2 REFLECTED POWER calibration error.	B2
9	Record CU-1132/SRA-33 insertion loss.	B3
10	Record CU-1132/SRA-33 reset accuracy.	B4
11	Record CU-1132/SRA-33 tuning time.	B5
12	Record CU-1132/SRA-33 reflected/forward power ratio.	B6
13	Record POWER METER NO. 3 FORWARD POWER calibration error.	C1
14	Record POWER METER NO. 3 REFLECTED POWER calibration error.	C2
15	Record CU-1133/SRA-33 insertion loss.	C3
16	Record CU-1133/SRA-33 reset accuracy.	C4
17	Record CU-1133/SRA-33 tuning time.	C5
18	Record CU-1133/SRA-33 reflected/forward power ratio.	C6
19	Record POWER METER NO. 4 FORWARD POWER calibration error.	D1
20	Record POWER METER NO. 4 REFLECTED POWER calibration error.	D2
21	Record CU-1134/SRA-33 insertion loss.	D3
22	Record CU-1134/SRA-33 reset accuracy.	D4
23	Record CU-1134/SRA-33 tuning time.	D5
24	Record CU-1134/SRA-33 reflected/forward power ratio.	D6
25	Inspect and lubricate cavity tuning gear assembly (CU-1131/SRA-33).	A7
26	Inspect and lubricate cavity tuning gear assembly (CU-1132/SRA-33).	B7
27	Inspect and lubricate cavity tuning gear assembly (CU-1133/SRA-33).	C7
28	Inspect and lubricate cavity tuning gear assembly (CU-1134/SRA-33).	D7

The Naval Ships Engineering Center requirement for this schedule is canceled when the Electronics Planned Maintenance System is implemented for this equipment.

USER ACTIVITY TECHNICAL MANUAL COMMENT SHEET
NAVSHIPS 4914 (10-62)
(COG 1 - 11-DIGIT STOCK NUMBER: 0105-503-9850)

NAVSHIPS NO. _____

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